

## Claims

What is claimed is:

1. A multi-chip module (MCM) comprising:
  - a plurality of SAS expander component circuits each having a number (n) of internal ports internal to the MCM and each having a number (m) of external ports for coupling to SAS devices external to the MCM; and
    - an internal fabric coupling selected ones of the internal ports in selected ones of the plurality of SAS expander component circuits.
2. The module of claim 1 wherein the plurality of SAS expanders comprises a number ( $N$ ) of SAS expander components each having a number ( $n_N$ ) of internal ports.
3. The module of claim 1 wherein the plurality of SAS expanders comprises a number ( $N$ ) of SAS expander components each having a number ( $m_N$ ) of external ports.
4. The module of claim 1 wherein the internal fabric comprises a static fabric.
5. The module of claim 4 wherein the static fabric is configured at manufacture of the MCM.
6. The module of claim 4 wherein the static fabric is configured at reset of the MCM.
7. The module of claim 6 further comprising:
  - a control logic circuit to configure the static fabric at reset of the MCM.
8. The module of claim 1 wherein the internal fabric comprises a programmable fabric.
9. The module of claim 8 wherein the programmable fabric is adapted to be configured by information received from a SAS device coupled to an external port of a SAS expander of the MCM.

10. The module of claim 1 further comprising:  
coordination logic communicatively coupled to the plurality of SAS expander component circuits to coordinate operation of the plurality of SAS expander component circuits.
11. The module of claim 10 wherein the coordination logic is adapted to present a unified expander to devices outside the module.
12. The module of claim 11 wherein the coordination logic is adapted to coordinate SMP message processing logic within each expander of the plurality of SAS expander component circuits.
13. The module of claim 11 wherein the coordination logic is adapted to present a single SAS address for the plurality of SAS expander component circuits.
14. The module of claim 11 wherein the coordination logic is adapted to present a single set of PHY numbers for the PHYs of the plurality of SAS expander component circuits.
15. A method for manufacturing a customized SAS expander having a predetermined number of ports, the method comprising:  
disposing a number (N) of SAS expander components on a multi-chip module (MCM) wherein each SAS expander component has a number (n) of internal ports internal to the MCM and wherein each SAS expander component has a number (m) of external ports for coupling to SAS devices external to the MCM and wherein the number N is sufficient to provide a total ports numbering  $(m_N + n_N)$  substantially equal to the predetermined number of ports;  
disposing an internal fabric on the MCM; and  
configuring the internal fabric to provide desired routes between the total ports.
16. The method of claim 15 wherein the step of configuring further comprises:

configuring the internal fabric as a static fabric at time of manufacture of the MCM.

17. The method of claim 15 further comprising:  
disposing a control logic circuit on the MCM coupled to the internal fabric,  
wherein the step of configuring further comprises:  
applying signals from a control logic circuit to the internal fabric to configure  
the internal fabric as a static fabric at reset of the MCM.
18. The method of claim 15 further comprising:  
disposing a coordination logic circuit on the MCM communicatively coupled  
to the SAS expander components to coordinate operation of the plurality of SAS  
expander components to present a unified expander interface to devices external to the  
MCM.